AMSAT News Service Weekly Bulletins
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SB SAT @ AMSAT $ANS-167.01
FD OSCAR OPERATIONS, PART I

HR AMSAT NEWS SERVICE BULLETIN 167.01 FROM AMSAT HQ
SILVER SPRING, MD JUNE 16, 1990
TO ALL RADIO AMATEURS BT

Field Day An Excellent Opportunity To Demonstrate Emergency OSCAR Operations

This year the annual ARRL sponsored Field Day (FD) event will take place on the weekend of June 23-24, starting Saturday at 18:00 UTC and ending Sunday at 21:00 UTC. FD is a simulated emergency preparedness exercise which challenges all of its participants to set up and operate an amateur radio station under "less-than-optimum conditions." This year OSCAR stations will find their way into many FD sites for good reasons. First, there is the pure excitement of making satellite QSOs at remote QTHs. Also, there are the satellite bonus points which can be earned for making just one satellite QSO. More importantly, with the current availability of packet radio store-and-forward message capability on FO-20 and the advent of BBS operations on AO-16, LO-19, UO-14, emergency traffic handling will soon be possible from anywhere in the world. Using the current flock of packet radio message satellites, there will be no place in the world which will not see several passes of these satellites per day. If a natural disaster should befall a certain geographical region, it will be possible for the PACSATs to provide additional capability to move "health-and-welfare" traffic in and out of the disaster area. With the current flock of PACSATs, small stations consisting of small, non-tracking antennas, small radios, and a laptop computer can make a simple PACSAT station in remote locations. Already, many PACSAT users are finding that a simple dual-band J-Pole antenna (see AMSAT Journal, March '90) will work quite well.
/EX
SB SAT @ AMSAT $ANS-167.02
FD OSCAR OPERATIONS, PART II

HR AMSAT NEWS SERVICE BULLETIN 167.02 FROM AMSAT HQ
SILVER SPRING, MD JUNE 16, 1990
TO ALL RADIO AMATEURS BT

Field Day An Excellent Opportunity To Demonstrate Emergency OSCAR Operations

FD will provide an excellent opportunity to not only test a simple station for PACSAT operations, it will also challenge those who want to use the other OSCARs such as AO-10, AO-13, and RS-10/11. With AO-10/AO-13, reliable emergency communications will be possible for a large portion of the northern hemisphere for many hours each day. For those who do not think it is possible to operate an AO-10/AO-13 station during FD, see the account of K8OCL in ASR #189. John describes the station that he and N8DUY set up for AO-13 during FD '89. Their simple station netted them 60 FD contacts and convinced them even more that it is possible to have fun with OSCARs on FD.

Still another reason to set up a FD OSCAR station is to expose and introduce other hams and non-hams to OSCAR operations. Many amateurs participating at an OSCAR equipped FD site will have an excellent opportunity to work PACSATs and OSCARs for the first time. Many non-hams who are invited to the FD site will not only have a chance to see HF operations, but will also experience what radio amateurs do with satellites. Today's non-hams are almost completely unaware that hams use their own satellites every day. Demonstrating an OSCAR FD station will certainly provide a surprise to both

hams and non-hams alike.

AMSAT encourages all hams who will be participating in FD '90 to consider setting up an OSCAR FD station. Look for many new stations this year sending "CQ FD" on AO-10, AO-13, AO-16, FO-20, LO-19, RS-10/11, and UO-14. "GOOD LUCK and QRZ FD."
/EX
SB SAT @ AMSAT $ANS-167.03
AMSAT SPACE SYM & ANNUAL MTG

HR AMSAT NEWS SERVICE BULLETIN 167.03 FROM AMSAT HQ
SILVER SPRING, MD JUNE 16, 1990
TO ALL RADIO AMATEURS BT

AMSAT-NA Symposium to be held at Johnson Space Center

AMSAT has announced that the 1990 AMSAT Space Symposium will be held at NASA's Johnson Space Center Visitor's Center near Houston, Texas. The date for the weekend meeting will be October 19, 20 and 21 and it will be hosted by the Johnson Space Center Amateur Radio Club (W5RRR).

Registration will open on Friday afternoon, and tours of the Center will be made available not only on Friday but throughout the entire weekend. The tour includes areas such as Mission Control, the Shuttle Mock-up facility as well as the "Zero-G" Tank, a massive swimming pool used to train mission specialists for Shuttle EVAs (rubber rafts and water wings are not allowed).

The Symposium will take place on Saturday in the Visitor Center's Main Auditorium. It will feature talks on many aspects of amateur space communication and related subjects. There are sure to be a number of talks on Microsat operations. There will also be a talk on the results of the SAREX STS-35 Shuttle Mission as well as details of planned SAREX operations on STS-37.

The day will conclude with the now legendary "AMSAT attitude-adjustment hour", a Texas-style Bar-B-Que and the AMSAT annual meeting. Sunday's program will consist of a series of talks emphasizing how the average ham' can use the various amateur satellites - especially the newer Microsats.

Accommodations at a low-priced "convention rate" has been secured at the King's Inn adjacent to JSC. For more information on this year's symposium, send an SASE to: AMSAT, 850 Sligo Ave., Silver Spring MD 20910 or call the AMSAT office at (301) 589-6062.
/EX
SB SAT @ AMSAT $ANS-167.04
CALL FOR PAPERS

HR AMSAT NEWS SERVICE BULLETIN 167.04 FROM AMSAT HQ
SILVER SPRING, MD JUNE 16, 1990
TO ALL RADIO AMATEURS BT

First Call For Papers For the AMSAT-NA Space Symposium For Oct. 10-12th

The AMSAT-NA Space Symposium and Annual Meeting will be held October 10, 11 and 12 at the Johnson Space Center (JSC) in Houston, Texas. Coming, as it does, during a year in which two Shuttle missions are scheduled to carry licensed amateurs, this should be an exciting site for the meeting. With the added attraction of the Center's extensive museum and fascinating tours available, attendance could easily break all records.

However, in order to have a successful meeting, quality papers must be presented. This announcement is to solicit appropriate papers. The AMSAT-NA Space Symposium, to be held in the JSC Visitors' Center Auditorium, is

intended to feature talks on the latest in technology in both the manned and unmanned aspects of the Amateur Space Program. Talks on MICROSAT utilization are particularly invited. The session Sunday morning at the Ramada Kings Inn will feature presentations aimed at the beginning satellite users and those wishing to try their hand with the RS birds, AO-13 and the MICROSATs.

Those wanting to present papers are requested to send summaries to the AMSAT-NA office 850 Sligo Ave., Suite #600 Silver Spring, MD, 20910 by July 15, 1990. Those selected for presentation will be notified by August 1, 1990.

Final texts will be due in electronic form, either E-mail or floppy disc, by September 1, 1990. Reproducible figures and photographs will be due at the same time.

Let's make this the best AMSAT-MA meeting ever. Get your summaries in right away.

[A LATE BREAKING NEWS ITEM: According to Rich Ensign, at the Dallas HamCom 3 convention last week four more NASA Shuttle astronauts became Technicians and Ken Cameron upgraded to General class license. The AMSAT News Service (ANS) will get more details on names and calls soon but suffice it to say that both the Mission commander and the YL astronaut on board have now joined the ranks of amateur radio operators. STS-37 should be a real experience!

Congratulations to the crew of STS-37 for making it a foursome.]
/EX
SB SAT @ AMSAT $ANS-167.05
AO-13 ORBIT UNDER STUDY

HR AMSAT NEWS SERVICE BULLETIN 167.05 FROM AMSAT HQ
SILVER SPRING, MD JUNE 16, 1990
TO ALL RADIO AMATEURS BT

Many attentive satellite operators have noticed that the AO-13 orbit perigee has been decreasing steadily since the final orbit change maneuver was completed in mid 1988. This effect is not one of orbital decay but is a symptom of deep space perturbations, most notably from the sun and moon, which cause the eccentricity of an elliptical orbit to increase and decrease over a long term cycle. If the perigee at some point in the cycle is low enough, AO-13 will begin to enter the earth's atmosphere, decay will begin to dominate, and eventually AO-13 may re-enter catastrophically and be lost.

Several amateurs, OE1VKW, N4HY, N6NKF, G3RUH, KA9Q, and WA5NOM among them, have undertaken to learn as much as possible about these effects and to attempt to numerically model the AO-13 orbit as far into the future as possible in order to determine, if possible, what will happen. While most of these models project a re-entry for AO-13 sometime within this decade, it must be emphasized at this point that all results thus far are thought to be incomplete and therefore inconclusive. Formal errors resulting from proj-ections months or years into the future still leave open the question of whether or when AO-13 will in fact re-enter prematurely.

AMSAT has contacted various institutions, including Millstone Hill (the radar complex that provided early orbital data during AO-10 and AO-13 burns), NASA's Goddard Spaceflight Center, and other NASA Centers in order to have the most complete possible analysis of the problem performed by experienced professionals. Any decisions or plans on the part of AMSAT must wait until after these results are obtained and fully understood. Bob McGwier (N4HY) expects to report as fully as possible in the upcoming AMSAT-NA Journal and in a presentation at the AMSAT-UK meeting in July.

[This statement was provided for ANS by N5BF.]
/EX
SB SAT @ AMSAT $ANS-167.06
ZRO TEST SCHEDULE

HR AMSAT NEWS SERVICE BULLETIN 167.06 FROM AMSAT HQ
SILVER SPRING, MD JUNE 16, 1990
TO ALL RADIO AMATEURS BT

Station Receiving Tests Schedule Announced
You have one more chance to test out your receive station on AO-13 during the latest round of The ZRO Memorial Technical Achievement Award Program. The "ZRO Test", which is a test of operating skill and equipment performance, has been running over the past few weeks and will continue through the end of June.

During a typical ZRO run, a control station will send numeric code groups using CW at 10 words-per-minute. At the beginning of the run, uplink power from the control station is set to match the general beacon downlink strength. This is level "zero". The control operator will send and repeat a random five-digit number, then lower their uplink power by 3 dB (half power) and repeat the procedure with a new random number. This will continue to a level 27 dB below the beacon (level "nine").

The following schedule of Mode "B" and "JL" ZRO tests were chosen for convenient operating times and favorable squint angles. The "B" tests can be heard on 145.840 MHz and the "JL" tests on 435.945 MHz.

Saturday June 30, 1990 at 1840 UTC "JL"
Saturday June 30, 1990 at 1930 UTC "B"

Any changes will be announced as soon as possible via the AMSAT HF and AO-13 Operations Nets. Recently updated ZRO brochures are available from WA5ZIB, Andy MacAllister, AMSAT V.P. User Operations, 14714 Knightsway Drive, Houston, TX 77083 for an S.A.S.E. with two units of postage. The brochure describes test procedures, means for obtaining certificates and gives some historical background about the program.

All listener reports with date of test and numbers copied should be sent to WA5ZIB at the address above. A report will be returned verifying the level of accurate reception. Good luck!
/EX
SB SAT @ AMSAT $ANS-167.07
OPERATIONS NET SCHEDULE

HR AMSAT NEWS SERVICE BULLETIN 167.07 FROM AMSAT HQ
SILVER SPRING, MD JUNE 16, 1990
TO ALL RADIO AMATEURS BT

AMSAT-NA Operations Net Schedule Announced

AMSAT Operations Nets are planned for the following times. Mode B nets are conducted on an AO-13 downlink frequency of 145.950. Mode J/L nets are conducted on an AO-13 downlink frequency of 435.970.

Date UTC	Time	Phs	Mode	NCS	U.S. Day
26 Jun 90	0115	144	B	N5BF	Monday
Orientation Change to 210/0					
09 Jul 90	0000	184	B	N5BF	Sunday

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16 Jul 90  0115  130  B     N5BF  Sunday
27 Jul 90  0030  130  B     N5BF  Thursday


For information on the amateur satellite program and how you can
participate, contact AMSAT-NA at P.O. Box 27, Washington, DC 20044, phone
(301) 589-6062, or contact your local AMSAT Area Coordinator.
/EX
SB SAT @ AMSAT $ANS-160.08
AO-13 TRANSPONDER SCHEDULE

HR AMSAT NEWS SERVICE BULLETIN 160.08 FROM AMSAT HQ
SILVER SPRING, MD JUNE 9, 1990
TO ALL RADIO AMATEURS BT

Transponder Schedule for AO-13 Effective 05MAY90

The present transponder schedule for AO-13 is as follows:


         Mode-B          : MA 000 to MA 100
         Mode-JL         : MA 100 to MA 125
         Mode-LS         : MA 125 to MA 130  (Mode S Beacon only)
         Mode-S          : MA 130 to MA 135
         Mode-BS         : MA 135 to MA 140
         Mode-B          : MA 140 to MA 256
         Omnis           : MA 220 to MA 040

The current attitude is:

                     BLON = 179.4  and  BLAT = -4.1 for 25 Jun 90

Cross mode B and S QSOs are possible during MA 135 to 140.

AO-10's Mode-B Transponder Now Available for Use:

AMSAT-OSCAR-10 appears to be receiving sufficient solar panel illumination
to support Mode-B transponder operations, therefore, the transponder is
available for general use whenever AO-10 is in view at your location.
Please DO NOT use the transponder if the signals are FMing.  The current
estimate of AO-10's attitude is   LON 24 deg    LAT -9 deg.

[AO-10 update received from Graham Ratcliff, VK5AGR, via AO-13 beacons.]
/EX
SB SAT @ AMSAT $ORBS-167.O
Orbital Elements 167.OSCAR

HR AMSAT ORBITAL ELEMENTS FOR OSCAR SATELLITES
FROM N3FKV LORENA, TX      JUNE 16, 1990
TO ALL RADIO AMATEURS BT

Satellite: AO-10
Catalog number: 14129
Epoch time:      90160.48774259
Element set:     528
Inclination:       25.9994 deg
RA of node:       200.1859 deg
Eccentricity:    0.5961905
Arg of perigee:   149.8173 deg
Mean anomaly:     264.9419 deg
Mean motion:    2.05881257 rev/day
Decay rate:      -2.70e-07 rev/day^2
Epoch rev:            5257
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Satellite: UO-11
Catalog number: 14781
Epoch time:      90156.61567397
Element set:     744
Inclination:       97.9462 deg
RA of node:       209.5469 deg
Eccentricity:    0.0011698
Arg of perigee:   287.2040 deg
Mean anomaly:      72.7880 deg
Mean motion:   14.65389143 rev/day
Decay rate:       8.60e-06 rev/day^2
Epoch rev:           33427

Satellite: RS-10/11
Catalog number: 18129
Epoch time:      90164.95867299
Element set:     221
Inclination:       82.9268 deg
RA of node:       330.9120 deg
Eccentricity:    0.0013025
Arg of perigee:   124.3978 deg
Mean anomaly:     235.8400 deg
Mean motion:   13.72092852 rev/day
Decay rate:      -9.00e-07 rev/day^2
Epoch rev:           14900

Satellite: AO-13
Catalog number: 19216
Epoch time:      90159.67587371
Element set:     131
Inclination:       56.9863 deg
RA of node:       151.4377 deg
Eccentricity:    0.6966655
Arg of perigee:   228.8202 deg
Mean anomaly:      46.2038 deg
Mean motion:    2.09700013 rev/day
Decay rate:       6.30e-07 rev/day^2
Epoch rev:            1522

Satellite: FO-20
Catalog number: 20480
Epoch time:      90162.16250383
Element set:      79
Inclination:       99.0403 deg
RA of node:       209.8098 deg
Eccentricity:    0.0541470
Arg of perigee:    62.2494 deg
Mean anomaly:     303.2469 deg
Mean motion:   12.83156814 rev/day
Decay rate:       4.00e-08 rev/day^2
Epoch rev:            1597
/EX
SB SAT @ AMSAT $ORBS-167.D
Orbital Elements 167.MICROS

HR AMSAT ORBITAL ELEMENTS FOR THE MICROSATS
FROM N3FKV LORENA, TX      JUNE 16, 1990
TO ALL RADIO AMATEURS BT

Satellite: UO-14
Catalog number: 20437
Epoch time:      90164.18410863
Element set:     165
Inclination:       98.6975 deg
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RA of node:       240.3067 deg
Eccentricity:    0.0011625
Arg of perigee:   161.6770 deg
Mean anomaly:     198.4834 deg
Mean motion:   14.28632237 rev/day
Decay rate:       6.10e-06 rev/day^2
Epoch rev:            2029

Satellite: AO-16
Catalog number: 20439
Epoch time:      90158.29152781
Element set:      83
Inclination:       98.7019 deg
RA of node:       234.5188 deg
Eccentricity:    0.0011186
Arg of perigee:   180.6504 deg
Mean anomaly:     179.4668 deg
Mean motion:   14.28730423 rev/day
Decay rate:       3.82e-06 rev/day^2
Epoch rev:            1945

Satellite: DO-17
Catalog number: 20440
Epoch time:      90160.38881602
Element set:      88
Inclination:       98.7040 deg
RA of node:       236.6199 deg
Eccentricity:    0.0011891
Arg of perigee:   172.3905 deg
Mean anomaly:     187.7455 deg
Mean motion:   14.28777289 rev/day
Decay rate:       5.45e-06 rev/day^2
Epoch rev:            1975

Satellite: WO-18
Catalog number: 20441
Epoch time:      90165.14016211
Element set:      89
Inclination:       98.7035 deg
RA of node:       241.3797 deg
Eccentricity:    0.0012933
Arg of perigee:   160.5777 deg
Mean anomaly:     199.5931 deg
Mean motion:   14.28879685 rev/day
Decay rate:       4.09e-06 rev/day^2
Epoch rev:            2043

Satellite: LO-19
Catalog number: 20442
Epoch time:      90164.50314377
Element set:      87
Inclination:       98.7034 deg
RA of node:       240.7589 deg
Eccentricity:    0.0013232
Arg of perigee:   162.1532 deg
Mean anomaly:     198.0118 deg
Mean motion:   14.28947935 rev/day
Decay rate:       3.71e-06 rev/day^2
Epoch rev:            2034
/EX
SB SAT @ AMSAT $ORBS-167.M
Orbital Elements 167.MISC

HR AMSAT ORBITAL ELEMENTS FOR MANNED AND MISCELLANEOUS SATELLITES
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FROM N3FKV LORENA, TX      JUNE 16, 1990
TO ALL RADIO AMATEURS BT

Satellite: SALYUT 7
Catalog number: 13138
Epoch time:      90163.45529334
Element set:     319
Inclination:       51.6027 deg
RA of node:       328.1900 deg
Eccentricity:    0.0001226
Arg of perigee:   204.4803 deg
Mean anomaly:     155.6220 deg
Mean motion:   15.63752866 rev/day
Decay rate:     4.3115e-04 rev/day^2
Epoch rev:           46411

Satellite: MIR
Catalog number: 16609
Epoch time:      90164.82563862
Element set:     733
Inclination:       51.6137 deg
RA of node:       347.7347 deg
Eccentricity:    0.0011372
Arg of perigee:    34.2360 deg
Mean anomaly:     325.9585 deg
Mean motion:   15.61392351 rev/day
Decay rate:     5.0055e-04 rev/day^2
Epoch rev:           24757

Satellite: HUBBLE
Catalog number: 20580
Epoch time:      90164.46937243
Element set:      91
Inclination:       28.4698 deg
RA of node:       273.2428 deg
Eccentricity:    0.0005745
Arg of perigee:    91.9520 deg
Mean anomaly:     268.1794 deg
Mean motion:   14.84442420 rev/day
Decay rate:      5.409e-05 rev/day^2
Epoch rev:             742
/EX
SB SAT @ AMSAT $ORBS-167.W
Orbital Elements 167.WEATHER

HR AMSAT ORBITAL ELEMENTS FOR WEATHER SATELLITES
FROM N3FKV LORENA, TX      JUNE 16, 1990
TO ALL RADIO AMATEURS BT

Satellite: NOAA-9
Catalog number: 15427
Epoch time:      90165.21961954
Element set:     592
Inclination:       99.1671 deg
RA of node:       164.9793 deg
Eccentricity:    0.0015642
Arg of perigee:    21.1307 deg
Mean anomaly:     339.0508 deg
Mean motion:   14.12591755 rev/day
Decay rate:       3.90e-06 rev/day^2
Epoch rev:           28356

Satellite: NOAA-10
Catalog number: 16969
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Epoch time:      90165.32390073
Element set:     441
Inclination:       98.6019 deg
RA of node:       193.3341 deg
Eccentricity:    0.0012478
Arg of perigee:   281.4238 deg
Mean anomaly:      78.5544 deg
Mean motion:   14.23632416 rev/day
Decay rate:       4.75e-06 rev/day^2
Epoch rev:           19420

Satellite: MET-2/16
Catalog number: 18312
Epoch time:      90163.84350850
Element set:     436
Inclination:       82.5504 deg
RA of node:       293.7260 deg
Eccentricity:    0.0011310
Arg of perigee:   270.3251 deg
Mean anomaly:      89.6614 deg
Mean motion:   13.83651108 rev/day
Decay rate:       2.19e-06 rev/day^2
Epoch rev:           14238

Satellite: MET-2/17
Catalog number: 18820
Epoch time:      90164.07684249
Element set:     288
Inclination:       82.5443 deg
RA of node:       353.7293 deg
Eccentricity:    0.0016652
Arg of perigee:   341.5232 deg
Mean anomaly:      18.5270 deg
Mean motion:   13.84346044 rev/day
Decay rate:       1.13e-06 rev/day^2
Epoch rev:           11961

Satellite: MET-3/2
Catalog number: 19336
Epoch time:      90163.78370784
Element set:     501
Inclination:       82.5382 deg
RA of node:       280.5406 deg
Eccentricity:    0.0016914
Arg of perigee:   328.9130 deg
Mean anomaly:      31.0929 deg
Mean motion:   13.16897489 rev/day
Decay rate:       3.91e-06 rev/day^2
Epoch rev:            9037

Satellite: NOAA-11
Catalog number: 19531
Epoch time:      90165.33192995
Element set:     291
Inclination:       98.9821 deg
RA of node:       113.6372 deg
Eccentricity:    0.0011113
Arg of perigee:   295.3133 deg
Mean anomaly:      64.6886 deg
Mean motion:   14.11625036 rev/day
Decay rate:       8.88e-06 rev/day^2
Epoch rev:            8856

Satellite: MET-2/18
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Catalog number: 19851
Epoch time:      90164.04741426
Element set:     236
Inclination:       82.5207 deg
RA of node:       231.7537 deg
Eccentricity:    0.0016300
Arg of perigee:    19.7446 deg
Mean anomaly:     340.4341 deg
Mean motion:   13.83982445 rev/day
Decay rate:       2.43e-06 rev/day^2
Epoch rev:            6499

Satellite: MET-3/3
Catalog number: 20305
Epoch time:      90163.65612208
Element set:     142
Inclination:       82.5530 deg
RA of node:       221.1891 deg
Eccentricity:    0.0015743
Arg of perigee:   346.3592 deg
Mean anomaly:      13.7110 deg
Mean motion:   13.15859810 rev/day
Decay rate:       4.20e-07 rev/day^2
Epoch rev:            3035
/EX


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Tad Cook
Seattle, WA
Packet: KT7H @ N7HFZ.WA.USA.NA
Phone: 206/527-4089
MCI Mail: 3288544
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USENET:...uw-beaver!sumax!amc-gw!ssc!tad
or, tad@ssc.UUCP
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